

ATOMIC ENERGY *newsletter*®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO. 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

Dear Sir:

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Processing difficulties encountered by W. R. Grace & Co. at its Curtis Bay, Md., rare-earth plant have made it impossible for the company to deliver thorium oxide as specified in its USAEC contract, and the company is now negotiating to end this contract. The company noted that since thorium is no longer in the same demand status as at the time of signing of the contract, it is considering disposing of the Curtis Bay facilities, which had been specially built to extract thorium salts from monazite sands. This is Grace's only such plant; all of its thorium output had been going to the USAEC. The plant is carried on the company's books at \$1,750,000. Loss (which was slight) for the period of its operation is included in Grace's first half of 1957 operating results, recently given to stockholders in its semi-annual report. (Other RAW MATERIAL NEWS, p. 5 this LETTER.)

For its fiscal year ending June 30, 1957, Atomic Development Mutual Fund, Inc., Washington, had net sales of 173,977 shares; this compares with the year earlier when it bought back 181,064 more shares than it sold. Interest of the public in the Fund has slackened since the time of its net sales of 2,892,216 which were chalked up for the fiscal year ending June 30, 1955. While the Fund's total net assets reached \$51,818,295 for the year ending June 30, 1957, its largest capital gains were from investments in companies whose nuclear business contributed little to the company's total earnings. (Its holding of Anaconda Co., for example, with market value June 30, 1957 of \$2,358,500, had fallen in value last week to \$1,815,600 which was below the Fund's acquisition cost. Although Anaconda has substantial uranium ore holdings in the U.S., the world wide price drops in copper (its largest interest) made it particularly vulnerable to the across the board fall-off of U.S. and Canadian stock markets.) (Other FINANCIAL NEWS, p. 2 this LETTER.)

The two atomic industry trade shows which have been held annually in the U.S. for the past three years are being consolidated into one annual show starting in March 1958. The American Institute of Chemical Engineers and the Atomic Industrial Forum are assigning their interests in their atomic exhibits to produce one combined show. Up to now there has been an Atomic Exposition (held in conjunction with the nuclear congress, and sponsored by the major U.S. engineering societies), and an Atomfair (held in connection with meetings of the Atomic Industrial Forum). New management of the combined show will be by International Atomic Exposition, Inc., Phila., Pa.

Nuclear reactor control instrumentation, covering the start-up, intermediate, and power ranges of operation, and using transistors in their circuitry, are being offered by Fairchild Camera & Instrument Corp., Syosset, L.I., New York. The company can furnish the equipment in either commercial specifications, for use in laboratories and commercial nuclear power plants, or to military specifications, for use aboard Naval vessels and in Army packaged power plants. Technical manuals, evaluation reports, etc., are available from the nuclear instrumentation department of Fairchild. (Other PRODUCTS, PROCESSES, INSTRUMENTS, p. 3 this LETTER.)

ATOMIC ENERGY BUSINESS NEWS...

CONTRACT LET:- Contract terms have been agreed upon by Consumers Public Power District, Columbus, Neb., and the USAEC, covering construction and operation of a large scale nuclear power plant at Hallam, Nebraska. Under the contract, the Commission, with specific assistance from Consumers, will construct a sodium-cooled, graphite-moderated reactor designed to produce 75,000 net kilowatts of electricity. The public power group will provide the site and a 100,000-kilowatt turbine generator; will contribute \$5,220,000 toward the costs of construction of the nuclear portion of the plant; and will operate the entire plant for five years. The USAEC will finance the bulk of construction costs for the nuclear portion of the plant, and bear pre-construction research and development costs estimated at about \$18,000,000. (Major portion of this research and development work will be done by North American Aviation, Inc., under an existing USAEC contract.)

STOCKHOLDING CHANGES SHOWN:- Changes in stockholdings made in August by firms with nuclear interests included sale, by Atlas Corp., of 3,900 shares of common stock of Stanrock Uranium Mines, reducing direct ownership to 461,600 shares..... Baker & Co., Inc., beneficial owner of more than 10% of Class A common stock of Nuclear Corp. of America, Inc., has reported direct holdings of 950,000 Class A common shares, after purchase of 150,000 shares in June.

DEBENTURE DEBT REDUCED:- Gunnar Mines, Canadian uranium producer, this week (Oct. 1), has turned over to the trustee for cancellation some \$4,250,000 of debentures which have been bought back during the past year, according to an official of the firm. Gunnar's \$19.5 million debenture issue, which was originally floated to bring its uranium property at Lake Athabaska, Northern Saskatchewan to production, will then have been reduced in amount outstanding to \$12.75 million, a reduction of over 33% during the first 1½-years of the company's commercial uranium production.

ATOMIC ENERGY PATENT & TRADE-MARK DIGEST...

ISSUED September 17, 1957 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:- (1) Quartz fibre electrosopes. Ronald P. Henderson, Abingdon, Berkshire, England, inventor. No. 2,806,960 to Ronald P. Henderson.

ISSUED September 17, 1957 to GOVERNMENT ORGANIZATIONS:- (1) Process of making expanded cellular product. T. J. Dietz, inventor. No. 2,806,255 assigned to USAEC. (2) Metal extrusion process. H. W. Dodds, C. B. Sawyer, inventors. No. 2,806,596 assigned to USAEC. (3) Anti-swing crane. R. C. Goertz, inventor. No. 2,806,610 assigned to USAEC. (4) Uranium recovery process and production of uranium tetrafluoride. R. H. Bales, R. S. Long, R. R. Grinstead, inventors. No. 2,806,764 assigned to USAEC. (5) Light water moderated nuclear reactor. R. F. Christy, A. M. Weinberg, inventors. No. 2,806,819 assigned to USAEC. (6) Nuclear reactor. E. P. Wigner, inventor. No. 2,806,820 assigned to USAEC. (7) Magnetic amplifier circuits. H. W. Collins, R. W. Roberts, W. J. Dunnet, inventors. No. 2,807,006 assigned to USAEC.

ISSUED September 24, 1957 to GOVERNMENT ORGANIZATIONS:- (1) Welding process. J. Zambrow, H. H. Hausner, inventors. No. 2,907,082 assigned to USAEC. (2) Recovering uranium and vanadium from carbonate solutions by reduction-precipitation. D. A. Ellis, R. O. Lindblom, inventors. No. 2,807,518 assigned to USAEC. (3) Producing an activated form of uranium oxide. M. J. Polissar, inventor. No. 2,807,519 assigned to USAEC. (4) Pulse generator. C. W. Roeschke, inventor. No. 2,907,722 assigned to USAEC. (5) High power pulsed oscillator. S. Singer, L. K. Neher, inventors. No. 2,807,723 assigned to USAEC. (6) Nuclear reactor shield. E. Fermi, W. H. Zinn, inventors. No. 2,807,727 assigned to USAEC. (7) Thermal nuclear reactor. F. W. Fenning, R. F. Jackson, (London, England) inventors. No. 2,807,580 assigned to USAEC. (8) Nuclear reactor. E. Fermi, L. Szilard, inventors. No. 2,807,581 assigned to USAEC. (9) Line-above-ground attenuator. R. B. Wilds, J. A. Ames, inventors. No. 2,807,785 assigned to USAEC.

PATENT NOTES:- Application has been made to Patent Compensation Board of USAEC by F. E. Dudley, president, Franklin Manufacturing Co., Westmont, N.J., for royalty fees for alleged infringement by USAEC of U. S. Pat. No. 2,524,164 for tube expander.

TRADE-MARK NOTES:- Mark Aquatel will be issued as Federal trade-mark to Isotope Products, Ltd., Oakville, Ont., Canada, for instruments used to measure moisture content..... Mark Atom-Ex is to be issued as Federal trade-mark to Stieh Chemical, Inc., New York, N.Y., for chemical used to decontaminate objects exposed to radio-activity.

NEW PRODUCTS, PROCESSES, INSTRUMENTS...

NEW PRODUCTS & SERVICES:- New calibrated absorber set, model AB-2, is offered for checking radiopurity of isotopes, or for estimating isotopic composition when the energy difference of emitted radiation is sufficient. Set consists of 30 calibrated absorbers mounted in lucite rings of 1 7/8"-diameter to fit standard absorber trays..... New Samson survey meter, model S-12, is a portable, battery-operated survey meter, incorporating a thin window ionization chamber to measure alpha contamination on flat surfaces. It may also be used to detect low level beta and gamma. -- Technical Associates, Inc., Burbank, Calif.

Scaled-down nuclear reactor, designed for laboratory use, uses as core 1-ft. steel sphere holding about 4-gal. of enriched uranyl sulfate in water solution. Core is shielded by 6-in. thick lead housed in 8x8-ft. tank of ordinary water. The reactor operates at a 5-watt power level. --Atomics International div., North American Aviation, Inc., Canoga Park, Calif.

Film badge service, offered by this organization, provides beta-gamma and neutron sensitive films, with five day reporting service. -- Health Physics Services Co., 1109-13 Low St., Baltimore 2, Md.

NEW PROCESSES:- New solvent extraction process (now in laboratory stage) for making uranium tetrafluoride, developed by Dow Chemical Co. people, was described before meeting of American Mining Congress, Salt Lake City, last fortnight. The process was said to eliminate several steps in the normal processing of the tetrafluoride, used as intermediate in production of uranium metal and uranium hexafluoride. Key to process is Dow-developed extractant, described only as an anion exchange type of reactant.

Research on the flotation process for treatment of low-grade pegmatitic ore is underway at the chemistry department of the University of Saskatchewan, Saskatoon, Canada. Sponsored and financed by the Saskatchewan Research Council, these studies of the treatment of low grade uranium ores are directed to eventual application to the many occurrences of low grade ores in Canada. Related studies are investigations into methods of solvent extraction for recovery of uranium from solution.

PRODUCT NEWS:- Price increases from 9 to 21% on its linear electron accelerators have been put into effect by Applied Radiation Corp., Walnut Creek, Calif. Increases were made necessary, firm president M. R. Jeppson states, by rising labor and materials costs and by increased engineering services.

Sale of several airborne particulate monitoring systems to the Danish Atomic Energy Commission has been made by Tracerlab, Inc., Waltham, Mass., nucleonic products firm. The systems, which monitor filterable radioactivity in the atmosphere, and are designed to afford protection to residents of areas surrounding nuclear reactor sites as well as laboratory people, will be used in connection with Denmark's new nuclear reactor facility.

Radioisotope use in the U. S. was outlined last fortnight in Paris by USAEC Commissioner W. F. Libby who told the UNESCO Conference on Radioisotopes that as of last August there were 4,812 licensed users in the U.S. He broke this down to: (1) Hospitals and private physicians, 1,754; (2) Industrial concerns, 1,667; (3) Colleges and universities, 265; (4) Federal and state laboratories, 370; (5) Foundations and institutes, 70; (6) Other uses, 60. Dr. Libby noted such applications as thickness gauges; liquid level indicators; radiographic testing; oil well logging; oil well stimulation; pipeline oil flow; petroleum refining; tool wear studies; corrosion studies; luminescent sources; and other industrial uses.

EXPERIMENTAL NOTES:- Installation of a 400-curie cobalt-60 unit has been completed at the fruit fly laboratory in Honolulu, Hawaii, operated by the entomology research division of the U. S. Dept. of Agriculture. Experimental projects planned with the equipment include studies to determine whether the method of releasing sterile flies (which has been used successfully to eradicate screw-worm flies from Curacao in the Caribbean) may be applicable also to the fruit-fly problem.

Some 57 physical research contracts with U. S. private research institutions and universities have recently been let by the USAEC. Equipment purchases, which were included in these contracts, include allocation of \$185,000 to Case Institute of Technology for purchase of a Van de Graaff machine; allocation of \$250,180 to University of Maryland to allow purchase of 3 MEV Van de Graaff accelerator. Metal studies in the research grants included \$33,630 to Horizons, Inc., for studies of the electrolytic extraction of niobium and \$13,168 to Indiana University Foundation for study of inorganic salts at high temperatures.

ATOMIC ENERGY REGULATIONS, LICENSES, PERMITS...

REGULATIONS:- Proposed regulation of USAEC is designed to guard against accidental conditions of criticality in the shipment of special nuclear material; comment has been invited on the regulation, published in the Sept. 21, 1957 Federal Register. Under the proposed regulation, limits would be placed on the amounts of plutonium, uranium-233, and enriched uranium which a licensee might transport or deliver to a carrier for a single shipment.

Financial protection which nuclear reactor licensees must maintain against public liability arising from a reactor accident is specified in a temporary regulation effective Sept. 26 issued by the USAEC. Commission action followed nuclear indemnity law enacted at last session of Congress. The regulation requires each licensee to maintain financial protection based on the thermal energy capacity of the reactor at the rate of \$150,000 per 1000-KW, with minimum amount \$250,000. Above this amount, the USAEC will indemnify the licensee and his suppliers up to \$500 million against a reactor accident. For this supplemental insurance, the USAEC will charge \$30 per 1000-KW with a minimum charge of \$100.

LICENSES:- Licenses are to be issued by the USAEC to: (1) Mitsubishi International Corp., New York, for shipment of tank type, heterogeneous, heavy water cooled and moderated nuclear reactor to Atomic Energy Research Institute, Tokyo, Japan, with builder, American Machine & Foundry Co., New York. (2) Catholic University of America, Wash., D.C., for acquisition and operation of a low power training reactor. (3) University of California, Berkeley, for acquisition and operation of 100 milliwatt reactor for training purposes, with builder, Aerojet-General Nucleonics, San Ramon, Calif.

PERMITS:- Permits are to be issued by the USAEC to: (1) Daystrom, Inc., to build at W. Caldwell, N.J., a 10 thermal kilowatt, water moderated research reactor. (2) Ordnance Materials Research Office (Dep't. of the Army), to build at Watertown, Mass., arsenal a 1,000 thermal kilowatt pool-type reactor fueled with enriched uranium. (3) Babcock & Wilcox Co., to enlarge its Lynchburg, Va., facility for initial purpose of investigating the proposed fuel assembly and core for the nuclear merchant ship reactor it is designing, developing and building under USAEC contract.

ATOMIC ENERGY INTERNATIONAL NEWS...

UNITED KINGDOM:- Further advances in experimental work on controlled thermonuclear reactions have been achieved by physicists at Harwell, according to official sources. The work, which is now underway there, has made it possible to control the thermonuclear power reaction under laboratory conditions at higher temperatures than it is believed have been achieved before.

What is claimed to be the largest gamma radiography machine in Great Britain was shown at the recent Engineering, Welding, & Nuclear Energy Exhibition in London, by Gamma Rays, Ltd., of Smethwick 40, Staffordshire. The machine is said to be capable of adaptation to 2,000 curies of cesium-137 when this becomes industrially available. Another new device shown by the firm was its iridium decay clock. This permits users of iridium isotopes to set the strength of the material as initially received, and then be able to read its strength at any succeeding period without charts or calculations..... Use of glass as protective material against ionizing radiations was shown by Pilkington Brothers, Ltd., St. Helens, Lancashire. Windows of various thicknesses for varying radiation strengths were shown..... Metals for nuclear energy work were shown in the exhibit of Imperial Chemical Industries, Ltd., Millbank, London SW1. Products of subsidiary ICI company, Marston Excelsior, Ltd., were also shown with their nuclear energy applications featured.

GERMANY:- Design of plant to produce heavy water by process used in the U.S. and Norway has been completed by Pintsch-Bamag, Butzbach. Farbwerke Hoechst has also started production of heavy water, using newly developed procedure, and with plant capacity of 6 metric tons annually. (Estimates are that if the present German atomic program is completed, some 100 tons of heavy water would be required by that country each year.)..... The firm of Degussa, at Hannau, is now said to be producing lithium-7 with purity of 99.974%; starting material is lithium chloride. Potential applications of the lithium-7 are as coolant for nuclear aircraft reactors. (Although Degussa process is reported to require 8 KWH to make 1-gram, cost is still much below present USAEC prices for the isotope.)

RAW MATERIALS...prospecting, mining, marketing...

UNITED STATES:- Phillips Petroleum Co. will start construction soon in McKinley County, N.M., on \$9,500,000 uranium processing mill with capacity of about 1,725 tons per day to treat Ambrosia Lake ores. Decision follows recent contract signing between Phillips and the USAEC for sale of uranium concentrates to the Commission. Ores treated at the new plant, which is planned for operation by mid-1958, will be from properties controlled by Phillips, and from independents in the area. Phillips' exploration activities in the Ambrosia Lake area began in 1955, and by 1956 enough ore had been blocked out to make a mill in the area economic.

CANADA:- Expansion of underground workings is planned by Pronto Uranium Mines, one of the Blind River area's pioneer producers. Work will comprise deepening of the mine shaft, which now goes to a depth of 591-ft., to about 1,000-ft., to provide room for two more levels or a total of seven. Mill operations are now at 1,500 tons per day. Company holds contract from Canadian government purchasing agency, Eldorado Mining & Refining, for sale of \$55,000,000 worth of uranium precipitates, and had ore reserves estimated at over 3 million tons with average grade of 0.134% at the end of last year.

Progress at Stanleigh Uranium Mining Corp.'s property at Blind River indicates that program, which called for start of milling operations in November of this year, will go through on schedule. Company expects that crushing and grinding unit will start at the end of this month, and that the leaching plant will get its first feed about a month later. Plant, which is rated at 3,000 tons per day capacity, is to be brought to capacity gradually.

UNITED KINGDOM:- U. K. Atomic Energy Authority has now offered to buy annually from existing or future mines in Kenya, Uganda, Tanganyika, Swaziland, and British Guiana chemical concentrates containing up to 500 short tons of uranium oxide. Contracts which the Authority offers would cover a ten year period from the coming into production of a mine, but not extending beyond 1972. Prices to be paid "would be reasonable in the light of world conditions", the Authority noted.

FRANCE:- Estimated 1957 production from the uranium ore concentrating plants of the Atomic Energy Commission at Gueugnon, Escarpriere, and Bessines is placed at 380 tons of concentrate containing 60% uranium; 300 tons of raw uranium; and 300 tons of thorium nitrate (the latter two of nuclear purity). (Also operated by the French Commission is the uranium fuel processing plant at Le Bouchet, near Paris, which has a capacity of 500 tons per year. Additionally, a new metallurgical plant will be built at Malvey, near Narbonne, to produce 1,000 tons a year.)

NEW BOOKS & OTHER PUBLICATIONS...on nuclear subjects...

United States Research Reactors; prepared by Battelle Memorial Institute for the USAEC. Describes reactors in the U.S. and abroad, grouped by type. Gives cost information for most of the research reactors, including analysis of the relation between the initial cost of the reactor itself and total costs incurred to make it useful, and other data. 73-pages. --Office of Technical Services, Wash. 25, D.C. (\$1.50).

Government Nuclear Indemnity Bill; bulletin No. 3471. Analysis of the Anderson-Price bill which provides up to \$500 million in government indemnity against liability claims resulting from personal injury or property damage caused by nuclear incidents. --Machinery & Allied Products Institute, 1200 Eighteenth St., N.W., Washington 6, D. C.

MANUFACTURERS' LITERATURE:- New technical bulletins showing radiation measuring and indicating instruments are available from Nucleonic Corp. of America, 196 DeGraw St., Brooklyn 31, N.Y. Radioactivity at Work is bulletin issued by Nuclear Science & Engineering Corp., Pittsburgh 36, Pa., outlining that firm's current work underway.... New catalog of sulfur-35 and phosphorous-32 radiochemicals is offered by Volk Radiochemical Co., 5412 N. Clark St., Chicago 40, Ill. Small graphite moderated nuclear reactor, using enriched uranium fuel, with power generating costs said to be comparable to diesel generators, is shown in booklet "GEC Atomic Power Achievement" issued by General Electric Co., Ltd., London WC2, England.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

October 1st, 1957

